APPENDIX C

IDENTIFICATION OF VARIABLES

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a = Inactivation rate coefficient
α = Coefficient of absorption
A = Medium absorbance
b = Inactivation rate function
c = Particulate density coefficient
C = Concentration
d = Distance
d_n = Dimensionless dispersion number
d_q = Quartz sleeve diameter
D = UV density
D_e = UV density per lamp
e = Base of natural logarithms
e = Extinction coefficient
E = Dispersion coefficient
F_p = Energy loss factor, lamp output
F_t = Energy loss factor, transmission
h = Depth of water
I = Light intensity
I_o = Lamp surface intensity
I_1 = Measured intensity at distance d
I_t = Intensity of transmitted light
K = Rate of bacterial inactivation
L_p = Path length
m = Particulate density coefficient
μw = Microwatts
nm = Nanometer
N = Bacterial density remaining after UV exposure
N_o = Initial bacterial density
N_p = Bacterial density associated with particulates unaffected by exposure to UV radiation.
Q = Total flowrate
R_e = Reynolds number
R_h = Hydraulic radius
δ^2 = Statistical variance
δ_m^2 = Dimensionless variance
S = Centerline spacing
S_v = Centerline spacing, vertical
S_h = Centerline spacing, horizontal
T = Theoretical residence time
T_m = Mean residence time
T_r = Transmission at a 253.7 nm wavelength
t_n = Exposure time
t_p = Time to peak
t_{10} = Time for 10% of tracer to pass

t_{50} = Time for 50% of tracer to pass
t_{90} = Time for 90% of tracer to pass
u = Velocity of wastewater traveling the reactor
V_v = Void volume of water in reactor
W_n = Energy output per lamp
x = Characteristic length of the reactor